What is claimed is:

1. An energy supplying device for a group of electric motors alternately operating with energy consumption function phases represented by motor start and motor acceleration functions phases and energy generation function phases represented by motor stop or motor deceleration function phases,

including a common DC-voltage bus which is connected to the electric motors and via a bi-directional variable voltage converter to at least one active DC-voltage energy storing buffer having at least one capacitor,

a voltage converter control unit inserted between the DC-voltage bus and the DC-voltage energy storing buffer for selectively controlling respective energy flows between the DC-voltage bus and the DC-voltage energy storing buffer to either transmit energy from the DC-voltage energy storing buffer into the DC-voltage bus during an energy consumption function phase or transmit energy from the DC-voltage bus to the DC-voltage energy storing buffer during an energy generation function phase of at least one of the electric motors, respectively,

wherein all electric motors are connected in parallel via separate motor controls directly to the DC-voltage bus,

wherein the DC-voltage bus is connected via a rectifying function component to a DC-voltage supply unit for supplying DC-voltage via the DC-voltage bus to each of the electric motors at least in the energy consumption function phases, and

wherein the voltage converter control unit is arranged for detecting varying DC-voltage and/or current parameters at the DC-voltage bus and at the DC-voltage energy storing buffer, respectively, and to control the voltage converter to direct a respective voltage energy flow into the DC-voltage or into the DC-voltage energy storing buffer in order to even out voltage variations in

the DC-voltage bus between set limits by determining the direction and/or amount of the respective voltage energy flow in dependence from the detected voltage and/or current parameters and the predetermined voltage variation limits, the predetermined limits of the DC-voltage bus defining a significantly narrower range than a range of voltage variations allowed at the DC-voltage energy storing buffer.

2. The device as in claim 1, wherein the control unit is connected to a superior control system, e.g. a first control system controlling the electric motors of the motor group, or a second control system communicating with the first control system.

3. The device as in claim 1, wherein the DC-voltage bus is connected with two or more DC-voltage energy storing buffers via a variable voltage converter for each DC-voltage energy storing buffer.

4. The device as in claim 1, wherein the DC-voltage energy storing buffer is controlled by the control unit to operate with a predetermined operation energy charge level lower than an a possible maximum energy charge level.

5. The device as in claim 4, wherein the DC-voltage energy storing buffer is chargeable from the exterior to the predetermined operation energy charge level.

6. The device as in claim 1, wherein the limit for the DC-voltage bus voltage variations define a range of about ±10% of nominal DC-voltage of the DC-voltage bus as provided by the rectifying component.

7. The device as in claim 1, wherein the limits of the DC-voltage energy storing buffer voltage variations define a range between 50 V and 300 V.

8. The device as in claim 1, wherein the electric motors are permanent magnet motors, preferably high efficiency permanent magnet motors.

9. The device as in claim 1, wherein the electric motors are provided in yarn feeders of a yarn feeding system, or in a weaving machine, or in one or several industrial robots.

10. The device as in claim 1, wherein the variable voltage converter is at least one inductance connected via two effect transistors to the DC-voltage bus, that the control inputs of both effect transistors are connected to the converter control unit for selectively directing a respective DC-voltage energy flow into the DC-voltage bus or into the DC-voltage energy storing buffer, and that the control unit is connected via a parameter conductor to the DC-voltage bus and via a parameter conductor to a DC-voltage energy storing buffer conductor extending between the inductance and the at least one capacitor, and that the capacitor the effect transistors are connected to ground, and that a filter capacitor is provided parallel to both effect transistors between the DC-voltage bus and the ground.